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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,966	08/14/2006	Peter Le Lievre	AUSLTD-006US	8614

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K&L Gates LLP
IP Docketing
630 HANSEN WAY
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EXAMINER	
MASHRUWALA, NIKHIL P	
ART UNIT	PAPER NUMBER
3749	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,966	LE LIEVRE, PETER	
	Examiner	Art Unit	
	NIKHIL MASHRUWALA	3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/16/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/16/2010 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the limitation in line 1 of a solar collector is " **arranged**" to be located…is unclear and need proper correction.

In claim 8, the limitation in lines 2-3 of a series of rotatable support members which rotate about "**an axis**" …is unclear. For installing absorber tubes in parallel on a series of the parallel rotatable support members, the rotating axis of each support members will have plurality of parallel rotating axis, and will not "**an axis**" claimed by the limitation. Unless they are installed it in series, it will have "an axis" of rotation as claimed. The applicant needs to clarify it with the correction in limitation accordingly to

the disclosed original specification. The examiner is interpreting the limitation as the rotatable support members are installed in "**series**" to have "**an axis**" of rotation.

4. Claim 1 is recites the limitation **"the channel portion"** in line 9. There is **insufficient antecedent** basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-15 and 17 are rejected under 35 U.S.C. 103(a) as obvious over US patent no 4,505,260 of Metzger in views of US patent no 3,026,858 of K.W. Fleischer (hence after 'Fleischer') and US patent no 4,416,264 of Herrick et al.

For claim 1, Metzger discloses a solar collector 10 per fig 1, that is arranged to be located at a level above a field of reflectors 20 & 22 and to receive solar radiation 18 reflected from reflectors within the field; the collector structure 10 comprising an inverted trough 28 and located within the trough 40, a plurality of longitudinally extending

absorber tubes 14 (& 14' per fig 5) that, in use, are arranged to carry a heat exchange fluid 32, the absorber tubes 14& 14', being supported side-by-side within the trough 28 and each absorber tube 14 having a diameter that is small relative to the aperture 16 of the trough (see fig 1 & 5 for size of aperture and diameter of tube 14). As collector structure is considered as a preamble and not a limitation which Metzger does talk about mounting of collector mirror 14 along with the reflectors 20, 22 in a structure. Metzger does not disclose the absorber tube to be freely supported by a rotatable support member which rotates about an axis that is orthogonal to the absorber tubes. Tube support structure of Fleischer discloses a freely supported (heat carrying fluid absorber) tube 6 on an orthogonal support roller 13 on which the tube are free to expand due to temperature changes per figs 2-3 (See col 1, lines 54-56 and col 2, lines 43-50). These rotatable support members are installed between two side walls 15 per figs 2-3 and the same can be installed between two opposite inside circumferential side walls channel of the trough 28 of fig 5 of Metzger. It would be obvious for a person of ordinary skill in the art at the time invention was made to provide such freely supported absorber tubes between two walls to Metzger in view of Fleischer so that it can take expansion and contraction due to temperature changes with out damaging the tube structure. Even though Metzger discloses two collector tubes, installed side-by-side per fig 5, it does not disclose plurality of very small diameter absorber tubes. The solar collector of Herrick per fig 2 discloses a series of very small diameter collector tubes 14 installed side-by-side in a trough 13 and it would be obvious to a person of ordinary skill in the art to modify the solar collector of Metzger in the teaching of Herrick so as to get

series of side-by-side collector tubes (having very small diameter) in order to use the combined collecting surface of all the tubes together for heat transfer very efficiently.

For claims 2-5, as discussed above in claim 1, Metzger discloses smaller diameter of the collector tubes 14 with respect to the aperture 16 of the trough 28 per fig 1. Herrick discloses much smaller diameter of the collector tubes 14 with respect to the aperture size of the trough 11 having glass tube diameter to be between 1 cm to 10 cm depending upon the mechanical strength and its wall thickness (see col 2, lines 38-43). From fig 2 of Herrick it seems the ratio of the tube diameter to the aperture size of the trough would be around 1:10 which would be consider closer to the range of 0.01:1.00 to 0.10:1.00 or to ratio of the diameter of each absorber tube 14 to the dimension of trough aperture 11 would be 0.03:1.00. And it would be also a choice in design in purview of one of ordinary skill in the art per MPEP 2144.04 to have number of absorber tubes to be about ten to thirty (or about sixteen) supported side-by-side within the trough.

For claims 6-7 and 9-10, Metzger discloses collector tube 14 to be preferably of metal (col 2, lines 37-40) with a dark or black color or coating for optimum absorption of the radiant energy. The collector assembly 10 of Metzger talks about using the collector for hot water for homes and hence it would be obvious for a person of ordinary skill in the art to consider the inverted trough 28 is located in space below the roof for protection so as to use it for making hot water for homes. Metzger also discloses the insulation 42 to the inverted trough 28 from outside.

For claim 8, as discussed above the limitation is disclosed in claim 1 by Metzger

in the teaching of Fleischer and series of rotatable support members which rotate about an axis that is orthogonal to the absorber tubes and series of such rotatable support members would be installed between side wall channel of the trough. .

For claims 11-13, Metzger discloses the transparent plastic or glass material for the collector 10 (see col 2, lines 36-37) so as to create a heat confirming cavity within the trough at the cavity/window 16. The heat of the radiant solar rays 18 would obviously pressurizing the cavity inside the window 16 so as to inflate the window 16 in direction away from the absorber tubes 14.

For claims 14-15, Metzger discloses a flow valve 46 (see fig 2) to control heat exchange fluid 36 through the absorber tubes 14(& 14') and another flow valve 50 along with venturi 36 formed at the end of the absorber tube 14 would provide a selection of channeling the heat exchanger fluid 32.

For claim 17, Metzger discloses the absorber tubes 14(& 14') to be extended along the full row as single length of tubing per figs 1 & 5.

For claim 19, the collector trough structure 10 of Metzger is having an arched top structural member 42 on top of it.

8. Claims 16, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metzger, Fleischer and Herrick as applied to claim 1 above, and further in view of Us patent 5,860,414 of Steinmann.

For claim 16, neither Metzger nor Fleischer and nor Herrick discloses a collector structure being connected together co-linearly to form a row of the structures. The solar collector support structure 28 and frame 18 of Steinmann discloses rows of such co-

linearly connected collector assemblies to form a single row of the structure per fig 1. It would be obvious for person of ordinary skill in the art to provide such co-linearly connected solar collector assembly to Metzger in view of Steinmann so as to get abundance of solar power and heat for commercial usage.

For claim 18, neither Metzger nor Fleischer and nor Herrick discloses a corrugated roof over the collector trough. The collector guide tube 40 of Steinmann discloses a spiral (corrugated type) having helical outer surface 48, 50 which can collect more solar energy than a regular circular collector. It would be merely a choice in design in purview of an ordinary skill in the art to modify the roofing of the trough with corrugation to Metzger in view of Fleischer so as to collect more solar energy from the larger corrugated area.

For claim 20, Metzger discloses the solar collector 16 mounted above the reflectors 20' (22') per fig 5 and such reflectors can be installed at a ground level but does not disclose a structure which in combination to be installed above a ground level. The solar structure/frame 18 of Steinmann which is obvious to install above the ground (frame includes the reflectors and collector assembly). It would have been obvious for a person of ordinary skill in the art to provide such structure to Metzger in view of Steinmann so that it can utilized for household purpose or outdoor field application also.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art of Metzger, Fleischer, Herrick and Steinmann disclose the current state of the art in a multi-tube solar collector structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NIKHIL MASHRUWALA whose telephone number is (571)270-3519. The examiner can normally be reached on Monday thru Friday-7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nikhil Mashruwala/
Examiner, Art Unit 3749

/Steven B. McAllister/

Supervisory Patent Examiner, Art Unit 3749